Golden State
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Lake Tahoe and its Watershed:

Science-Based Decision Making for Resolving Basin-Wide Environmental Problems

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The Cause for Concern

Continuous long-term evaluation of water quality in Lake Tahoe since the early 1960's has shown that algal growth is increasing at a rate greater than 5 percent per year. Over this same period, there has been a decline of clarity at an alarming rate of nearly one foot per year. This long-term trend in loss of transparency, as measured with the extremely reliable Secchi disc, is both statistically significant ($p<0.001$) and evident to even the casual observer.

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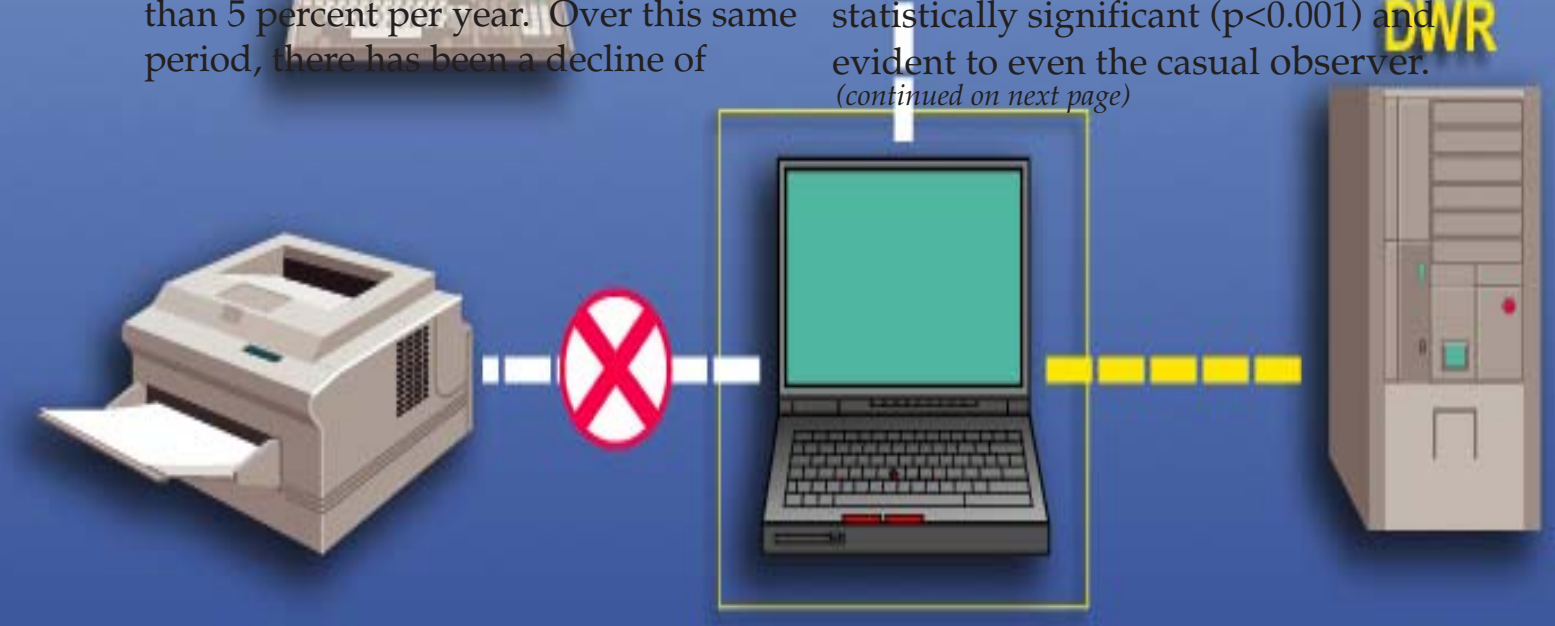

A complete Table of Contents is on the back cover...

If the loss of clarity continues at this rate, the resulting loss of transparency will also be accompanied by a change of lake color from its famous cobalt blue to an increasing green with a variety of changes in the make-up of the aquatic food chain. The simple message of keeping Tahoe blue has been widely accepted by an increasingly aware public.

The Tahoe Basin is a changed and still changing landscape. Today, significant portions of this once pristine region are urbanized and the road network is extensive. Since the early 1960s, the Tahoe Research Group (TRG) of UC Davis has shown that many factors such as land disturbance, increasing resident and tourist population, habitat destruction, air pollution, soil erosion, paved and unpaved roads, use of road salt, loss of wetlands and areas for natural infiltration of runoff have all interacted to degrade the Basin's air quality, terrestrial landscape, and streams, as well as the lake itself. The ability of Lake Tahoe's large volume to dilute nutrient and fine-sediment loading to levels where they have no significant effect on lake water quality has now been lost. To regain a more natural balance of nutrient loading has long been the aim of the TRG's research and management efforts.

Science-Based Decision Making

The watershed approach taken at Lake Tahoe for many decades recognizes that lake water quality is linked to upland watershed processes and air quality. Disruption of natural ecosystem processes which naturally treat runoff (e.g. wetlands, groundwater infiltration, vegetation) and a changed landscape which alters hydrology and promotes the accelerated loading of nutrients and sediment (e.g. impervious cover, road networks, habitat disruption, land disturbance which accelerates erosion), have impacted natural watershed processes at Tahoe and many of the world's lakes.

The current working hypothesis is that successful implementation of land, air and water quality restoration projects is considered the only likely avenue to arrest further decline in lake clarity. This understanding precipitated the formulation of the Environmental Improvement Program (EIP) by the Tahoe Regional Planning Agency. The EIP is a regional document that presents restoration projects considered necessary in order to achieve environmental restoration in the Tahoe Basin. The EIP has wide support from federal, state and local stakeholders, and can be continuously updated based on an adaptive management model. Adaptive management is designed to speed rates of development and implementation of appropriate resource management strategies through research and monitoring. In the case of Lake Tahoe, since nutrient retention time is estimated at a time scale of more than 10 years, it will take many years to see changes in lake clarity that result from immediate reductions of nutrient and sediment inputs and to reach equilibrium conditions. Management must respond quickly to lessons learned from scientific inquiries and efforts must focus on the most important nutrient sources.

At left, a researcher samples a stream in the Tahoe basin, checking for pollutants that accumulate over time and contribute to the progressive decline in Lake Tahoe's transparency.

Examples of Key Findings Relevant to Lake Clarity Restoration

Measurements of phytoplankton primary productivity in Lake Tahoe were initiated on the understanding that this parameter provides a useful integration of the biological, physical and chemical factors at work in a lake. The first data on

phytoplankton growth in Lake Tahoe were taken in 1959 with the highly sensitive carbon-14 method, at which time the annual rate was slightly less than 40 grams Carbon per meter squared per year (g C m^{-2} yr^{-1}) and typical of an ultraoligotrophic lake. During the period 1998-2000, values were nearly 5-fold higher at 190 g C m^{-2} yr^{-1}. For the years prior to 1959, average annual primary productivity has been reconstructed from an analysis of sediment cores. In 1998 Alan Heyvaert of the Tahoe Basin Group concluded that the baseline pre-disturbance (prior to 1850) primary productivity was 28 g C m^{-2} yr^{-1}. The calculated value for 1900-1970, the period between the effects of the Comstock logging era of the late 1800s, when significant portions of the Basin's forests were clearcut, and the onset of urbanization of the Tahoe Basin, was almost identical at 29 g C m^{-2} yr^{-1}. The recovery to virtually baseline conditions following the extensive timbering activities of the Comstock period provides evidence that Lake Tahoe **can** recover from watershed disturbance within decades.

Long-term algal growth response bioassay experiments show a shift from co-limitation by both nitrogen (N) and phosphorus (P), to predominant P limitation. This began in the early to mid 1980s, and is due to the accumulation of anthropogenic nitrogen from atmospheric deposition directly onto the lake surface (Jassby et al. 1994).

The disappearance of the dominant diatom *Fragilaria crotonensis* from the phytoplankton assemblage circa 1980 further supported the shift towards P limitation. These results confirm current efforts to reduce P-loading through erosion control, revegetation, land acquisition of environmentally sensitive parcels, and other similar projects.

We now know that both nutrient loading (by stimulation of algal growth) and fine-sediment discharge (through a direct effect on lake optical properties) are the major factors controlling the decline in Lake Tahoe's clarity. Led by Alan Jassby in 1999, the Tahoe Research Group concluded that a buildup of either phytoplankton-derived materials or fine mineral suspensoids, or both, could explain the long-term drop in clarity. Based on physical considerations, however, a significant role for mineral suspensoids seems likely. Preliminary results from the UCD Clarity Model for Lake Tahoe further support the importance of the fine-grain size mineral suspensoids (< 3μm) in affecting Secchi depth (Geoffrey Schladow, UCD Department of Civil and Environmental Engineering). A reduction in the lake particle inventory (not annual loading) by approximately 50% could return the lake to the clarity levels experienced 30 years ago. At the same time, continued build-up of mineral particles appears to further reduce clarity.

Once nutrients enter the lake they remain in the water, and can be recycled for decades. Concomitantly, the small soil particles, which have the largest influence on light transmission, settle at extremely low rates. As a consequence, these pollutants accumulate over time and contribute to Lake Tahoe's progressive decline in transparency.

Annual Nutrient Input Budget

(values as metric tons)

	Total-N	Total-P	Dissolved-P
Atmospheric Deposition	**234**	**12.4**	**5.6**
Stream loading	**82**	**13.3**	**2.4**
Direct runoff	**23**	**12.3**	**2.4**
Groundwater	**60**	**4**	**4**
Shore erosion	**1**	**1.6**	No Data
Total	**400**	**43.6**	**14.4**

It is not enough to institute erosion control measures that target total suspended sediment discharge if the relevant-sized particles continue to get through untreated. Indeed, larger, less important particles are most likely to be removed by watershed management practices with traditional BMPs; however, improvements to lake clarity may be far less than anticipated.

The recently completed nutrient input budget clearly suggests the importance of atmospheric deposition, stream loading and direct runoff as important P sources. Phosphorus reduction

Dr. Charles Goldman

Dr. John Reuter recently won the prestigious 2002 Excellence in Research Award, presented by the Academic Federation of the University of California, Davis.

strategies will have to address these multiple sources. Using the estimated loading of dissolved-P as a first approximation of biologically available phosphorus (BAP), this budget further shows that BAP is on the order of one-third of total-P. This is not uncommon; however, the 14.4 metric ton value may underestimate true BAP. For surface runoff from the watershed, 80% of the P load is associated with the particulate fraction (>0.45 μm).

A number of independent investigations have identified streambank erosion as an important source of suspended sediments, and consequently phosphorus, in the tributaries to Lake Tahoe. The extensive road network, along with other forms of impervious coverage and disturbance, may have caused changes to watershed hydrology that in turn affect stream morphology. Investigations on Ward Creek suggest that effects of human development are evident primarily during high-discharge years. This work has indicated that sediment and nutrient transport may exhibit a threshold relationship with flow, i.e., when total annual precipitation exceeds 100-150 cm, proportionately higher loads occur. Factors including total precipitation, drainage density, road miles, distance to tributary, land disturbance or coverage, slope and others act to affect the quality of runoff. Statistical analysis of the TRG and Lake Tahoe Interagency Monitoring Program data suggests that no single factor, whether it be a natural geomorphic or anthropogenic characteristic, adequately explains all the variation between and within watersheds.

In Conclusion

Science-based decision-making has been successfully used at Lake Tahoe. Researchers throughout the world are looking to Tahoe for a successful strategy for managing lakes and reservoirs more successfully. Currently, California and Nevada are cooperating to derive a total maximum daily load for nutrient and sediment loading which will allow Lake Tahoe to meet the stringent water quality standards necessary for oligotrophic lakes. Allowing the natural functions of floodplains to act works in concert with the need to improve water quality in lakes. The role of research and monitoring in this process is crucial. We are working effectively with the responsible agencies to provide the best available science to meet the needs of this challenge.

Comments regarding this article may be sent to

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National Flood Insurance Program 2001 Year In Review

Federal Emergency Management Agency
Washington, D.C., December 28, 2001

Under the new leadership of FEMA Director Joe M. Allbaugh, the Federal Insurance Administration and the Mitigation Directorate merged to form the Federal Insurance and Mitigation Administration (FIMA), bringing together once again the insurance, floodplain management and flood mapping components of the National Flood Insurance Program (NFIP) to ensure fuller coordination of program initiatives and messages.

"The NFIP is central to FEMA's mission of reducing the impact of natural disasters. Pre-disaster, community-based mitigation is the key to minimizing property and economic damage and loss of life, and insurance is the best protection against the financial risks. No amount of federal assistance after a flood disaster can match the speed and thoroughness of flood insurance. Flood insurance is effective, fair, and promotes accountability," Allbaugh said.

Federally backed flood insurance is now available in more than 19,700 communities that have adopted floodplain management ordinances designed to reduce future flood losses by regulating new construction. In 2001, the number of policies in force increased to more than 4.3 million, representing nearly $589 billion worth of coverage. (Color maps with state-by-state policy, coverage and claims figures are on FEMA's website at *http://www.fema.gov/nfip/pcstat.htm*).

Following are brief highlights of some significant NFIP developments in 2001:

☑ **Map Modernization** - During Fiscal Year 2001, approximately 6,000 Digital Flood Insurance Rate Map (DFIRM) panels were prepared using the latest Geographic Information Systems technology. Flood maps provide essential information for insurers, consumers, lenders and government officials. The need to update maps to reflect changes in flood hazards caused by recent development in many communities is greater than currently available funding. FEMA estimates it would need $800 million over seven years, in addition to the $50 million it now obtains from map fees each year. But full map modernization using emerging technologies could help prevent $48 billion in flood damage to new buildings and infrastructure over a 50-year period. This year, nearly 20 national, state and local organizations — representing state and local officials, realtors, builders, surveyors and others with a stake in floodplain management, emergency response, mitigation, land-use planning and environmental protection — formed a coalition to support additional funding for map modernization.

☑ **Cooperating Technical Partners (CTP)** - Under this initiative, communities, states and/or regional agencies perform all or portions of data collection and mapping tasks according to FEMA standards. The partnership stretches available dollars and expands and accelerates map modernization efforts. In fiscal year 2001, FEMA allocated $8 million of flood study funding for CTP activities. The most extensive such partnership to date is with the state of North Carolina, which has initiated a $65 million flood data and flood mapping update.

☑ **Flood Map Store** - As an added convenience to the public, customers now can place orders for flood mapping products online at the new FEMA Flood Map Store, *http://web1.msc.fema.gov*. The secure site allows for quick credit card ordering and features three easy searching methods. Check the *Catalog* for brief descriptions of all FEMA map products. *Map Search* helps customers find products by a street address or specified area on the map. *Quick Order* allows customers who are

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knowledgeable about FEMA products to enter a map panel number or community number directly. Customers still can speak with a Map Service Center service representative toll-free by calling 1-800-358-9616. Hardcopy maps are available in digital format via the internet .

☑ Cover America II
This nationwide ad campaign recently moved from increasing public awareness of flood risks and flood insurance to generating call-in responses from interested consumers to facilitate customer-agent contact and boost policy sales. The response to two TV spots that cable stations began carrying in October has been outstanding — close to 9,500 calls the first month, an increase of more than 5,000 — and resulted in the highest percentage of agent referrals ever. In November, the NFIP held a brainstorming session for representatives of the insurance and lending industries and other federal agencies that produced fresh ideas and new tactics for increasing sales.

☑ Concept of Operations
To achieve its goals in a web-oriented world, FIMA engaged its Write Your Own company partners to help develop a conceptual technical architecture design, or Concept of Operations, that will use emerging technologies to make the entire process of writing flood insurance—accessing, sharing and using flood data, and adjusting claims—more user-friendly and information-oriented, thereby increasing program efficiency and decreasing costs. Further discussions with an expanded group of WYO partners were held in January 2002.

☑ Training
In Fiscal Year 2001, the NFIP trained 12,722 agents at 398 Insurance Agent seminars throughout the country and held 133 Lender Workshops for 2,433 participants. A new web-based training module, Surveyor's Guide to the Elevation Certificate, became available online at

http://nfip.kevric.com/ecsurveyo

in two versions to cover the needs of surveyors, engineers, architects, community officials and insurance agents. A total of 2,715 agents used the Agent Training Station at

hftp://training.nfipstat.com

for the basic and/or advanced version of the state-of-the-art, interactive Agent Tutorial module.

☑ Rule Changes
In August 2001, following a thorough review by FIMA, a final rule was published in the Federal Register allowing a one percent increase in the expense allowance paid to private insurers that sell and service flood insurance to reflect more accurately their costs in writing policies and servicing claims. In November, a final rule was published revising NFIP regulations to include definitions for future-conditions hydrology and for the floodplains that may be shown on Flood Insurance Rate Maps for informational purposes at the request of a community. In December, the Federal Register published a proposed rule that will enable the NFIP to increase rates charged for pre-FIRM, V-zone properties-older structures built in high-hazard coastal areas—that currently are eligible for so-called "subsidized" rates. This would bring their premiums more in line with their actual risk, and also reflects last year's findings of a Congressionally mandated study that without such changes, V-zone rates will seriously underestimate the increasing flood risks from steadily eroding coastlines.

☑ Risk Pools
Under another proposed rule published in the Federal Register, the NFIP would launch a three-year pilot project that would permit governmental risk pools to sell flood insurance to public entities to cover their public buildings. This would allow this market segment to be protected against flood losses under the same mechanism local governments typically use for other coverages. Participants in the pilot would be limited to no more than six, and they must comply with the eligibility criteria and performance standards that are required of private insurance companies participating in the Write Your Own program.

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☑ **NFIP Extinguishes Debt**
During times of unusually heavy losses, the NFIP exercises its statutory borrowing authority with the U.S. Treasury. Then, as claims subside, it repays borrowed funds, with interest, from premium income. By the end of June, the NFIP had repaid the last of some $1.6 billion borrowed incrementally over the previous five years.

☑ **Tropical Storm Allison**
Allison, the costliest single flood event in NFIP history, caused major flooding in Texas and Louisiana and heavy losses in other states as distant as Pennsylvania. Flood damage resulted in over 30,000 claims and the final payout will exceed $1 billion. Through its insurance industry partners, the NFIP moved swiftly to respond. Adjustors from all parts of the country traveled to affected areas to meet the needs of stricken policyholders.

☑ **Multi-Billion-Dollar Storm Conference**
In April, FIMA hosted a conference in Charleston, S.C., to review our readiness to respond to catastrophic damage resulting from multi-peril events. For exercise purposes, FIMA posed having to respond to a pair of massive hurricanes that might strike the U.S. in rapid succession. Participants included federal and state agencies, insurers, independent adjusting firms, wind pool associations, departments of insurance and others, who studied scenarios detailing damage to real property and infrastructure from two simulated Category V hurricanes—one devastating parts of Florida and causing massive flood and wind damage to other southeastern states, followed days later by another coming ashore at Brownsville, Texas, and moving through Houston. Insurance claims from such storms could number in the millions, and 70-80 percent of these areas' infrastructure could be destroyed. Many recommendations emerged, among them the creation of a Super Catastrophe Claims Office outside but near the affected areas, with private insurance companies and the NFIP co-located to service their customers.

National Flood Conference 2003

Representatives of the insurance and lendng industries and federal, state and local officials meet annually to review existing and future technology to increase policy growth and retention. The next National Flood Insurance Program (NFIP) Conference is scheduled for May 28-30, 2003 at the Hilton San Francisco. The conference will include sessions on such topics as mapping, marketing, repetitive loss, Community Rating System (CRS) and claims.

Los Angeles County Drainage Area (LACDA)

by Monique Valenzuela and Garret Tam Sing
DWR Southern District

While the floods of 1952, 1960, 1969, 1980 and 1983 caused significant damage, the most damaging flood on record for the Los Angeles County Drainage Area (LACDA) was in February 1938. This flood caused 49 deaths and damage throughout the County totaled an estimated $800 million. A large volume of floodwater, originating predominantly in the San Gabriel Mountains, significantly flooded the cities of Glendale and Burbank. Extreme flood flows eroded the banks of the Tujunga Wash, then damaged residential and commercial structures and washed out bridges and roads. This flood demonstrated the need for additional flood control measures and under the Flood control Act of 1938, the Corps of Engineers prepared a revised plan for project construction in the LACDA totaling over $230 million.

The threat of flood damage, however, increased along with the increase in urbanization, and the improvements made in the '30s and '40s could not keep up with the increase. The population increase in L.A. County (from 2.7 million people in 1940 to 7.5 million by 1980) has generated greater volumes of runoff due to increased peak flows — a result of the construction of paved surfaces and rapid runoff storm drain systems. Damage and destruction from floods led to the LACDA Project improvements.

The Los Angeles County Drainage Area Project is a system of flood control reservoirs and channel improvements designed to increase the flood protection level for 500,000 residents in 14 communities. The system includes facilities on the Los Angeles and San Gabriel Rivers, Rio Hondo, Ballona Creek, and related tributaries. The project covers the area from Whittier Narrows Dam to the Rio Hondo Channel; the Los Angeles River from Rio Hondo Channel to the Pacific Ocean; and Compton Creek from the Los Angeles River to the Artesia Freeway. The Los Angeles River and its tributaries contain five major dams, 129 debris basins, and 470 miles of channel modifications.

Before the Project, some reaches of the mainstem system provided only 25- to 50-year flood protection. Thus, flooding from a 100-year flood would cause damage in developed areas of the San Fernando Valley near the Los Angeles River and Tujunga Wash; downtown Los Angeles near the Los Angeles River; and in a large area bordering the Los Angeles River and the Rio Hondo. (In the lower Rio Hondo and Los Angeles River, where reaches were protected by levees, there was a threat that a flood exceeding a 25- to 40-year event could overtop the existing levees and cause them to fail with catastrophic results.)

Communities affected include parts of Bellflower, Burbank, Carson, Cerritos, Compton, Downey, Glendale, Lakewood, Long Beach, Lynwood, Montebello, Paramount, Pico Rivera, and South Gate. In most areas, the flooding would be 1 to 4 feet deep, and in some areas, it could be 8 to 10 feet deep. A 100-year flood event has the potential for loss of life and severe property damage to residential, industrial, and commercial properties, as well as public facilities.

The 500-year floodplain covers approximately 200 square miles (and 320,000 structures), mostly in the lower reaches of the basin. The overflow from a 100-year flood event would cover approximately 82 square miles with an estimated population of 500,000.

A current estimate of damage recovery costs due to a 100-year flood without the LACDA project is $2.3 billion. In contrast the improvements to the LACDA will provide 133-year flood protection to the lower basin; reduce the 100-year floodplain from 82 square miles to 7 square miles; and the annual preventable flood damage benefits as a result of the improvements are estimated to be $58.6 million. Zone A and Zone V areas are susceptible to local stormwater flooding, stream overflows, and coastal flooding along the shore in the City of Long Beach.

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L.A.County Drainage Area

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The LACDA project includes:

- ☑ Improvements to the hydraulic characteristics of the Rio Hondo Channel just above the confluence with the L.A. River to accommodate a flow of 164,000 cfs, to provide about 133-year level of flood protection.

- ☑ Improvements to 21 miles of existing levees, modification of 23 bridges to accommodate higher levees, with armoring as well as raising levee tops with placement of fill or construction of parapet walls, to provide protection from the force of overtopping waters.

- ☑ Improvements to the safety of bridges by using new seismic design guidelines allowing them to safely pass a 133-year flood. (Railroad bridge modifications are located south of Del Amo Boulevard and north of Slauson Avenue crossing the Rio Hondo Channel.)

- ☑ Improvements to 22 miles of the Los Angeles River and Rio Hondo bike and equestrian trail which provide connections to seven parks adjacent to the River. The trail begins at Whittier Narrows Dam, continues along the Rio Hondo to the L.A. River confluence, and follows the L.A. River to the Pacific Ocean.

Enhancement of trails and landscapes was also a part of this project. Local community members volunteered to clean up the river and plant vegetation to improve the aesthetics of the River.

In addition to flood control measures provided by the LACDA project, water conservation efforts are currently under investigation at Santa Fe Dam on the San Gabriel River and Whittier Narrows Dam on the Rio Hondo, and at Hansen Dam.

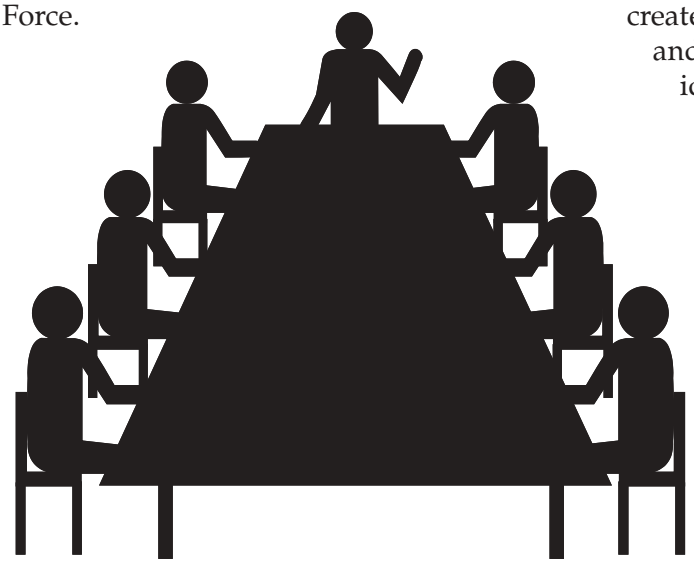
The total cost of the LACDA project was approximately $240 million. This project was authorized by Congress in 1990. Construction began in 1995 and was completed in December 2001, five years ahead of the estimated construction time.

For questions or further information about this article, please contact Garret Tam Sing by email *garrett@water.ca.gov* or phone at 818-543-4648. F

California Floodplain Management Task Force

by Maria Lorenzo-Lee, Task Force Coordinator
and Elizabeth Patterson, Task Force Advisor

A bipartisan effort to reduce flood losses has emerged over the years in response to escalating flood damage. After the 1997 floods, then Governor Wilson requested a Flood Emergency Action Team (FEAT) evaluate the floods and provide recommendations. One recommendation was the establishment of a Floodplain Management Task Force.



In 2000, Governor Davis again recommended establishment of a Floodplain Management Task Force through Assembly Bill 1147. In April 2002, the California Floodplain Management Task Force was created. The ***purpose*** of the Task Force is to examine key floodplain management issues and make recommendations to the legislature for policy changes. The ***goal*** of the Task Force is to have a report of the policy recommendations forwarded to the Department of Water Resources (DWR) and to the Governor's office by December 2002.

Approximately 30 local, State and federal stakeholders interested in floodplain management have been selected as members. The Task Force Chair is Department of Water Resources' Director, Thomas Hannigan. The two Vice-chairs are Greg Zlotnick, representing the Association of California Water Agencies (ACWA) and Leslie Friedman-Johnson, representing The Nature Conservancy.

Sergio Guillen is the Floodplain Management Task Force Executive Officer, and Maria Lorenzo-Lee is the Task Force Coordinator. Other staff is provided by DWR's Division of Flood Management. Because floodplain management issues can get highly controversial, a professional facilitator was hired to mediate the meetings. Also, a nationally known technical consultant, URS, was hired to prepare presentations and technical information. A Planning Working Group was formed to help plan Task Force meetings and three other work groups were created to work on proposals and to research successful ideas.

The public presented their floodplain management concerns through Task Force members or spoke at public testimony sessions. Six Task Force meetings were planned – each a public meeting. Five of the meetings have been held. The remaining meeting is scheduled for December 12, 2002.

December 12, 2002 – DWR
Resources Building, 1416 9th Street,
Room 1131 Sacramento CA 95814
(916-653-8693)

Progress made by the FPM Task Force will be reported in a future issue of Golden State Floodlight.

Information on background, Task Force membership, meetings and agendas can be found on the Floodplain Management Task Force webpage: *http://fpmtaskforce.water.ca.gov*

For questions or further information about this article, please contact Maria Lorenzo-Lee, at *mlorenzo@water.ca.gov or 916-653-8693 or Sergio Guillen, at sguillen@water.ca.gov or 916-651-8137*

Floodplain Management Training at the National Emergency Training Center (NETC)

by Jerry Bare
DWR. Floodplain Management Branch

Even if you have previously taken workshops developed and presented by the California State Department of Water Resources, you may still enjoy and profit from the elements of the National Flood Insurance Program, Community Rating Service, or the Retrofitting of Floodprone Residential Structures presented at the federal level.

The Federal Emergency Management Agency provides floodplain management training through the Emergency Management Institute at NETC in Emmitsburg, Maryland, for federal, State, and local government personnel. FEMA will reimburse students for the cost of airfare and provide lodging while they're attending classes at NETC. The expenditures to be paid by students are for a local airport shuttle, airport parking and a five-day meal ticket which costs about $75.

Classes offered for the coming federal fiscal year:

E234 – Digital Hazard Data Course
Jan 27-30, 2003*
May 12-15, 2003*

* Courses less than one week in length.

E273 – Managing Floodplain Development Through the NFIP
Mar 31-Apr 4, 2003
Aug 11-15, 2003
Sep 15-19, 2003

E278 – NFIP/Community Rating System
Apr 7-11, 2003
Sep 22-26, 2003

E279 – Retrofitting Floodprone Residential Structures
Jan 27-31, 2003

For further information on these classes or to apply for registration, please contact your NFIP State Coordinator's office. In California, please contact Jerry Bare, at *jbare@water.ca.gov* or phone (916) 653-3503. The NETC web address is *http://training.fema.gov/emiweb/rclists.htm*

Elevation Certificate Training for Surveyors Now Offered Online!

by Jerry Bare
DWR, Floodplain Management Branch

Certifying building elevations on the Elevation Certificate just became a lot easier, thanks to a new web-based training module developed for land surveyors, engineers and architects.

The *Surveyor's Guide to the Elevation Certificate* is a new tutorial available through the National Flood Insurance Program (NFIP) web site hosted by the Federal Emergency Management Agency (FEMA). Located at *www.fema.gov/nfip*, the NFIP web site provides a wide range of information about all aspects of floodplain management and flood insurance.

After accessing the NFIP web site, visitors can select "Surveyors" under "Audience Type" to view the tutorial for surveyors. The surveyor's tutorial also was developed to assist those community officials who monitor compliance with the

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Sacramento River Conservation Area Forum (SRCAF)

by Burt Bundy
Manager, SRCAF

A New Era of River Management and Coordination

The Sacramento River Conservation Area Forum was established to protect, restore and enhance the fish and riparian habitat and associated wildlife of the upper Sacramento River. Through legislation by Senator Jim Nielsen, (SB1086), an Advisory Council consisting of farmers, fishermen, environmentalists, and representatives of local government and State and federal agencies was formed to develop a plan with guidelines to manage and coordinate activities along 222 miles of the Sacramento River from Keswick to Verona. The *Upper Sacramento River Fisheries and Riparian Habitat Management Plan*, was signed into law in 1989, and is an early and successful example of a consensus planning process, (often cited as the prototype example in California). Structured into the plan is a conceptual proposal for riparian habitat restoration along the main river, and specific fishery restoration actions to restore the salmon and steelhead fisheries of the river and its tributaries. Through the support of the fisheries portion of the 1989 Plan, most of the 20 plus fisheries actions have been accomplished, including the temperature device at Shasta Dam, solutions for fish passage at Red Bluff Diversion Dam, screening at major pumping plants and restoration activities on the tributaries.

In 1993, Secretary of ResourcesDouglas Wheeler gave direction to the Advisory Council to complete the riparian habitat portion of the plan and funded the Department of Water Resources to develop a Geographical Information System to provide information to assist in the planning activities.

To guide implementation of the River's riparian habitat management program, the *Sacramento River Conservation Area Handbook* was created. The *Handbook* addresses both the dynamics of riparian ecosystems as well as the realities of the local agricultural and landowner issues. The guiding principles and planning tools provided in the publication are designed to direct riparian habitat management within the Inner River Zone (IRZ) along the river. The six principles that guide activities within the Conservation Area are:

1. Ecosystem management
2. Floodplain management
3. Voluntary participation
4. Local concerns
5. Bank protection
6. Information/education

The Handbook provides language that protects existing land uses including agriculture and structural hard points such as buildings, bridges, pumping plants, flood control structures and levees from bank erosion. It also recognizes the importance of agriculture to the ecosystem and assures landowners that activities along the River do not detrimentally impact those operations, and that related activities outside of the IRZ must also be considered in the Sacramento River Conservation Area Forum's planning process.

A Memorandum of Agreement between local, State and federal agencies has been signed that formally adopts the *Handbook* and supports the formation of a locally based nonprofit organization, the Sacramento River Conservation Area, to coordinate activities along the river. The MOA establishes a commitment by county, State, and federal agencies to coordinate their activities with the Sacramento River Conservation Area Forum. The SRCAF is governed by a Board of Directors, which includes both private landowner and public interest representatives from each of the seven involved counties, an appointee of the Resources Agency, as well as ex-officio members from six state and federal resource agencies. A Technical Advisory Committee (TAC), composed of experts from relevant disciplines has been

Sacramento River Conservation Area Forum *(continued from page 12)*

established to advise the SRCAF Board on issues related to river management and site-specific planning. Committee members include agency and academic scientists as well as local stakeholders.

The MOA, *Handbook*, and Sacramento River Conservation Area represent a new type of sustainable river corridor management in which all stake-holders, including local, State, and federal agencies, public interest groups and landowners are closely involved in the planning and decision-making process, as well as implementation, of river related activities. Restoration efforts, flood control, water supply and other activities benefit from the open dialogue provided by the Sacramento River Conservation Area Forum planning process. It is essential to have full involvement by all interested parties to encourage the varied habitat needed along the banks of the Sacramento River, to support continued valuable agricultural production and to provide vital flood protection. The Sacramento River Conservation Area is a locally driven forum that provides a balanced voice to the people along the Sacramento River.

For questions or further information about this article, please contact Burt Bundy by email *bundy@water.ca.gov* or phone 530-528-7411.

Elevation Certificate Training for Surveyors Now Offered Online!

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elevation requirements of their communities' floodplain ordinances.

This new tutorial only takes about half an hour to complete. The home page of the Surveyor's Guide to the Elevation Certificate (*http://training.nfipstat.com/ecsurveyor*), lists PC system requirements and gives two options – either begin the guide with introductory instructions, or begin without instructions. The later choice takes you to a page with three tabs.

- ☑ Clicking on the "Elevation Certificate" tab allows visitors to view and download an electronic copy of the EC along with instructions on how to complete it.
- ☑ Clicking on the "Surveyor Video" tab opens a video that briefly describes the process a surveyor follows to establish a building's elevation points.
- ☑ Clicking on the "Bldg. Diagrams & Photos" tab displays a series of eight sample building diagrams and representative photos. This section of the tutorial is designed to show surveyors, engineers and architects where to take the necessary elevation measurements for each building diagram.

Navigation tools at the bottom of each page on the site provide information not only on how to move around within the tutorial and how to use each section most effectively, but also allow visitors to email their questions or comments directly to EC specialists at FEMA.

If you have questions about completing the Elevation Certificate, contact either FEMA Region IX office or California State NFIP Coordinator, Ricardo Pineda by email, rpineda@water.ca.gov or phone 916-653-5440. Contact information for each FEMA regional offices is accessible at http://www.fema.gov/about/regoff.htm.

Please note: our readers outside California must contact their own State NFIP Coordinator or their FEMA regional office.

For questions or further information about this article, please contact Jerry Bare by email *jbare@water.ca.gov or phone 916-653-3503.*

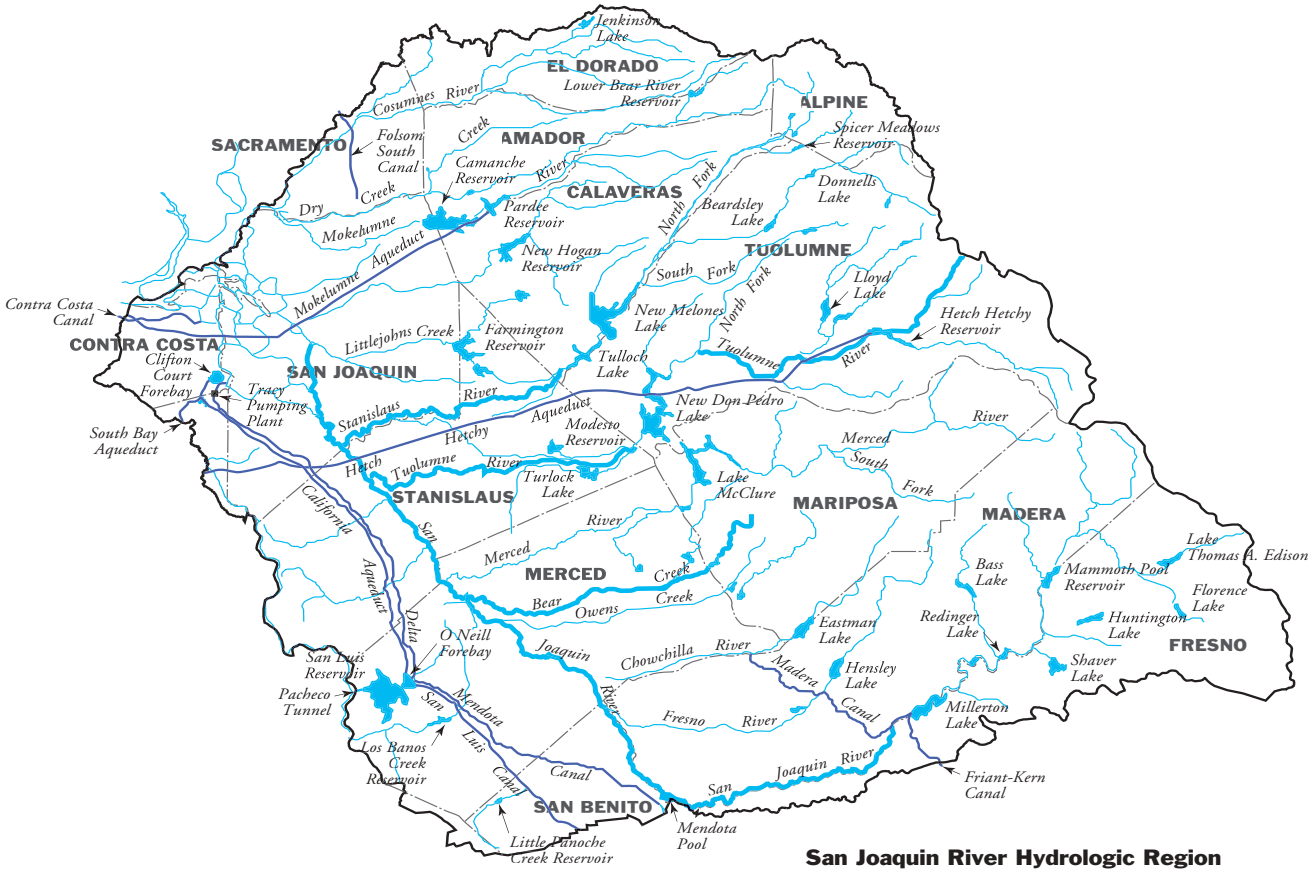
San Joaquin River Management Program

by Paula Landis
DWR. Chief San Joaquin District

The San Joaquin River Management Program (SJRMP) was authorized by Assembly Bill 3603, and signed by the Governor on September 18, 1990. The bill specifically authorized an Advisory Council and an Action Team. Representatives on the Advisory Council and Action Team include a number of State and federal agencies; representatives from counties and cities in the area; water user interests; and environmental, fisheries, and wildlife groups. Action Team Subcommittees were formed in accordance with legislation based on specific problem areas, such as flood protection, water supply, water quality, recreation, fisheries, and wildlife. Participants may present concerns and issues that affect the San Joaquin River system during the meetings. Attendees are encouraged to participate in developing solutions. Decisions are made by consensus.

The area encompassed by the program is the San Joaquin River from Friant Dam downstream through the northern boundary of the South Delta Water Agency and all other tributaries of the San Joaquin River up to the first major dam. The major tributaries are the Merced, Tuolumne and Stanislaus Rivers. The area also includes the North Fork of the Kings River. The study area was divided into ten study reaches based on similarities in hydrology and environmental conditions.

The San Joaquin River Management Plan was published in February 1995. This plan identifies nearly 80 consensus-based actions that, if implemented, will benefit the San Joaquin River system and its many users. The recommended actions fall into three categories: projects, studies, and acquisitions.



San Joaquin River Hydrologic Region

Assembly Bill 3048, signed into law on September 15, 1994, extended SJRMP until January 1, 2000 for the purpose of implementing the San Joaquin River Management Plan. Senate Bill 807, approved by the Governor October 7, 1999, extends existing law until January 1, 2002. The program is currently moving forward independent of legislation and in support of CALFED.

Current activities include pursuing funding and sponsors to implement actions identified in the Plan, participating in CALFED, CVP Improvement Act, the Corps' Comprehensive Study, and organizing and sponsoring watershed courses. SJRMP has played a significant role in several ongoing and successful projects, such as the West Bear Creek, the real-time Water Quality Monitoring Network, the Firebaugh to Mendota Corridor, the salmon habitat restoration, and the salmonids in the classroom education program.

SJRMP provides a regional forum in the San Joaquin Basin for local agencies, environmental groups, landowners, and agriculture, business, industry, recreation, and other interests to work directly with State and federal agencies to develop ideas. To meet the inherrent challenges, the following goals and principles will help SJRMP perform its role.

Goals

- Provide a regional, ecosystem-wide perspective for critical issues in the San Joaquin River watershed without the limitations imposed by political boundaries.
- Provide a regional grassroots forum for local governments, environmental organizations, water rights holders, landowners, and agriculture, business, industry recreation, and other interests.
- Facilitate and promote planning, funding and implementation of projects and concepts consistent with SJRMP principles.

Principles

- Use a consensus approach to assure that impacts resulting from actions are acceptable to all interests.
- Give full consideration to all interested parties' concerns.
- Maintain an open, credible, flexible and collaborative process.
- Generate buy-in for implementation of projects.
- Encourage continued local involvement.
- Participation to be voluntary.

CALFED funding provided a position dedicated to managing the SJRMP to facilitate implementation of CALFED and SJRMP goals. The Action Team meets bimonthly and the Advisory Council meets quarterly. Additional meetings can be called if urgent matters need to be addressed. Communication with participants is carried out via email, surface mail and the web. The SJRMP web site is located at *http://wwwdpla.water.ca.gov/sjd/sjrmp/index.html*.

For questions or further information about this article, please contact Paula Landis by email *plandis@water.ca.gov* or phone 559-230-3310.

New Faces

Deputy Director Jonas Minton has a keen interest in how Floodplain Management is applied in California.

As far as Floodplain Management in California is concerned, one of the most pivotal executives, next to DWR Director Tom Hannigan, is Deputy Director Jonas Minton, who was appointed Deputy in June 2000. Besides the Division of Flood Management, his area of responsibility includes the Division of Safety of Dams and the Division of Planning and Local Assistance.

A strong supporter of the national importance of Floodplain Management, Minton is especially concerned how FPM is applied in California. He is assisting Director Hannigan in chairing a FPM Task Force authorized by Governor Davis to examine key floodplain management issues and to make recommendations. (See article on page 10).

Prior to his appointment as Deputy, as a loaned executive from DWR, Minton was Executive Director of the Sacramento Water Forum from 1995 to 2000. In this position, he was instrumental in developing an historic agreement on the management of American River water. In 1994, again as a loaned executive, he served as General Manager of the El Dorado County Water Agency.

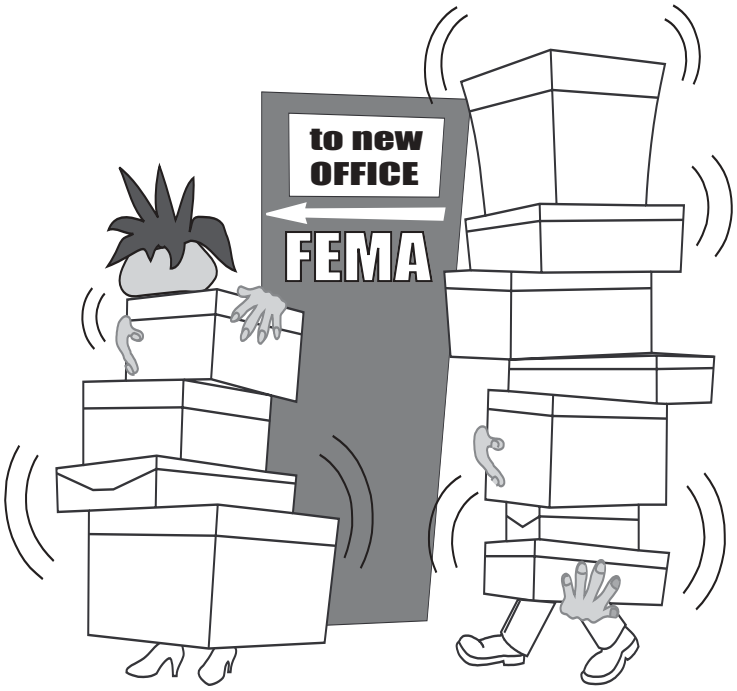
Minton earned his B.A. and M.S. in Government from California State University, Sacramento in 1970 and 1973, respectively. He came to work for DWR in 1978 as an Environmental Specialist III in what was then the Division of Planning. One of his first assignments was to provide environmental review of Reclamation Board Projects. He later managed the Office of Water Conservation, which is now the Water Use Efficiency Office.

For recreation and thrills, Jonas is a whitewater kayaker and a telemark skier!

New FEMA Office

FEMA Region IX has moved to a new office location. Effective June 17, 2002, the new address is:

FEMA Region IX
1111Broadway, Suite 1200
Oakland, California 94607-4052
office 510-627-7177
FAX 510-627-7147
Region IX NFIP Web page:
www.fema.gov/regions/IX/R9-nfip.shtm



Floodplain Managers Never Die, They Just Keep Treading Water

by A. Jean Brown
DWR Staff

Why would anyone come back to work after retirement?

Organizational funding and budgets are always the ruling factor. Sometimes a surplus, more often a budget deficit, so managers have to find ways to get the work done without over spending. The Department of Water Resources has found a simple, yet effective way to get a better return on its payroll spending by encouraging retirees to work **after** retirement. Called "Retired Annuitants", a restriction of 960 hours over a calendar year is imposed. This amounts to about halftime. (Who would want to work more?) The halftime restriction excuses the retired annuitants and DWR from paying into the retirement system, and DWR from paying for vacation or sick leave.

"Retired Division of Flood Management employees play a key role assisting current employees by providing technical expertise developed over many years of working on the State's flood management system."
- Ricardo Pineda

Obviously, this is a win-win situation. DWR thus reaps the benefit of long-time experience at a reduced overhead rate. The retired annuitant earns extra money above the retirement pay. So both are happy. Retired Division of Flood Management employees play a key role assisting current employees by providing technical expertise developed over many years of working on the State's flood management system.

In the Floodplain Management Branch, several RA's have been utilized. Two ex-Branch Chiefs, Jean Brown and Andy Lee are examples. (Andy's contribution, however, was tragically cut short by his death on September 30, 2001). Jean provided Andy assistance through most of Andy's time as Branch Chief, and now continues to help Ricardo Pineda, the current Branch Chief. Antoinette (Ann) Daniel is a retired annuitant who has served as the editor of this newsletter continuously for about a decade and a half. Her expertise has been invaluable.

Other retirees have served, or continue to serve, the Division of Flood Management as RA's. They include Don Meixner, Maurice Roos, Jake Angel, Glen Gould, Ken Lloyd, Will Graves, Bill Mancebo, Gene Serr, Ruth Dudley, Don Young, John Hyde, Walt Terry, Ray Barsch, Jim Coe, Pauline Amaro, Jim Nightingale, Marge Parks, Jinji Kobayashi, Steve Makis, and John Paserello. Not all are still active RA's, but collectively they represent over 750 years of expertise. Their contributions have been highly valuable to the Division of Flood Management.

When asked what he thought about the retired annuitants, Ricardo Pineda said, "they are a great help in keeping the Division's work and specifically the FPM program going, especially now with a tight budget and a freeze on hiring new personnel. I don't know what we would have done without their expertise." Jean Brown's response to the same question was that "the RA program personally has worked out very well. The work is still interesting, there are good people to work with, and I have flexibility in working hours. It's a good way to taper off after retirement."

For questions or further information about this article, please contact A. Jean Brown by email *jbrown@water.ca.gov* or phone 916-653-8726.

Flood Protection Corridor Program

by Liz Mansfield, Environmental Specialist
DWR, Flood Protection Section

The Flood Protection Corridor Program (FPCP) was established when California voters passed Proposition 13, the "Safe Drinking Water, Watershed Protection, and Flood Protection Act." in March, 2000. The FPCP authorized bond sales of $70 million for flood management when coupled with wildlife habitat enhancement and/or agricultural land preservation. Of the $70 million, approximately $5 million will go to educational programs, bond sales fees, bond counsel, and other overhead costs. Another $5 million was earmarked by the Legislature for the City of Santee, leaving approximately $60 million for flood corridor protection projects throughout the State.

Approximately $27.5 million has been committed to projects so far. Another $30 million in grants is expected to be awarded early next year. The $30 million will be the subject of a solicitation for project proposals this fall.

The legislative intent of the FPCP is to fund projects that provide nonstructural approaches to flood management such as, among other things, acquiring easements and other interests in real property in flood corridors from willing sellers and setting back existing flood control levees.

The Department of Water Resources may fund flood corridor protection projects in two ways: (1) award grants to local public agencies or nonprofit organizations through a competitive solicitation process, or (2) provide direct expenditure funding to state-initiated or state-sponsored projects, or those that have a connection to an ongoing project with State involvement. For the competitive grants, a selection committee made up of scientific and technical experts from DWR, the Department of Fish and Game, the Department of Conservation, the Department of Food and Agriculture, the Governor's Office of Emergency Services, and the CALFED Bay-Delta Program developed a point system of evaluation criteria by which projects can be evaluated and prioritized.

Priority is given to projects at locations that have been assigned a high priority by DWR for flood protection, and by either the Department of Conservation for agricultural land preservation, or by the Department of Fish and Game for wildlife habitat protection or restoration. In addition, a plan to minimize potential impacts to adjacent landowners is required and a local public hearing must be held prior to acquiring land interests.

Progress To Date
In response to outreach efforts begun in Spring 2000, DWR began to receive grant requests. Of the eleven projects that qualified for direct expenditure, five were recommended for approval based upon state interest and a significant contribution to flood protection, wildlife habitat enhancement, and/or agricultural land conservation. Short summaries of the five qualifying projects follow.

☑ Staten Island Acquisition
Staten Island is located in the upper delta of San Joaquin County, between the north and south forks of the Mokelumne River. If Staten Island were used for flood management, either the river channels could be widened with setback levees or approximately 9,000 acres could be infrequently flooded during major flood events to protect nearby Delta Islands and provide transitory storage for the Mokelumne Watershed. Acquisition of the island provides a contiguous habitat corridor to protect critical agricultural wetlands for migratory birds.

☑ Todd/Venn II conservation easements and Todd Fee Title Acquisition
Working together in the Big Bend area of the Tuolumne River five miles southwest of Modesto, the East Stanislaus Resource Conservation District has acquired fee title while the U.S. Natural Resource Conservation Service has acquired a perpetual conservation easement on the Todd parcel. The NRCS will also acquire a perpetual conservation easement on the Venn II parcel.

Acquisition of both of these parcels will provide increased transitory floodwater storage within the Tuolumne River floodway while restoring natural fluvial processes to the system. Furthermore, these parcels, which are located approximately 5 miles upstream from the confluence with the San Joaquin River, supply the missing pieces that will allow the restoration of 363 contiguous acres of riparian habitat in the Tuolumne River floodplain.

☑ Feeney-Lerch Ranch Acquisition
The Feeney-Lerch Ranch, located just downstream from the town of Glenn, west of Willows, was identified in a 1978 study initiated by the Reclamation Board, listing parcels along the Sacramento River that could be purchased as a way to preserve riparian vegetation in the active meander zone. In addition to preserving natural fluvial processes, purchase of the Ranch will conserve existing orchards and preserve mature riparian habitat on the bank and on depositional berms in the floodway.

☑ Ojai Meadows Project
This project will acquire 14 acres of historical wetland area in the Ojai Valley for restoration purposes, transitory storage and flood damage reduction. This multipurpose project will reduce flooding of State Highway 33, which is a main approach to the Nordoff High School, a designated emergency assembly and evacuation center for Ojai Valley. The project will also enhance a wetland that will provide for groundwater recharge, water quality benefits and educational opportunities for the local high school, grammar school and community at large.

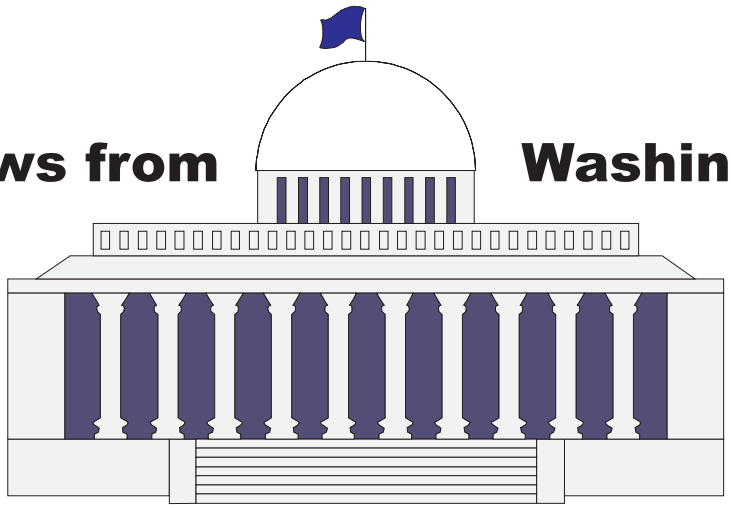
☑ Mystic Lake Wetlands/Agri-Empire Acquisition This project added 922 acres to the 10,000-acre San Jacinto Wildlife Area that is adjacent to the 7000-acre Lake Perris State Recreational Area. Using Mystic Lake for transitory storage will provide for flood reduction benefits down stream while preserving wildlife friendly agricultural practices.

What's Next?
The remaining funds, about $30 million, will be available through a competitive grant solicitation process anticipated to begin in October, 2002. The established selection committee using the point system evaluation criteria will review proposals. The evaluation criteria will include flood protection, wildlife conservation and agricultural land conservation. Additional criteria will be used to assess the quality of the proposal, miscellaneous benefits and likelihood of project success.

For more information on the FPCP, please contact
Earl D. Nelson, Manager
Flood Protection Corridor Program,
California Department of Water Resources
1416 Ninth Street, Room 1641
Sacramento, CA 95814.
E-mail *enelson@water.ca.gov* or phone (916) 654-3620. Information is also available on the web site *www.dfm.water.ca.gov/FPCP/index.cfm*

For questions about this article, please contact Elizabeth Mansfield by email *elizab@water.ca.gov* or phone 916-654-3620.

News from Washington



Based on information in ASFPM's News & Views, June 2002 prepared by Meredith R. Inderfurth, Washington Liaison, and Rebecca Quinn, Legislative Officer, ASFPM.

Federal Emergency Management Agency (FEMA)

Disaster Mitigation Act of 2000 (Section 322, Mitigation Planning) - Although the interim final rule for state and local mitigation planning is in effect, FEMA will continue to evaluate the program provisions. The final rule can be expected in Spring 2003.

Mapping Modernization -Both House and Senate budget resolutions provide for funding the $300 million requested by President Bush for mapping in FY 2003. The resolutions are guidance documents and not actual appropriations, but it is easier for the Appropriations Committees to include mapping if the cost is assumed in the resolutions. Staff of the Federal Insurance and Mitigation Administration (FIMA), a recently organized part of FEMA, has expressed interest in convening an advisory panel for ongoing consultations during implementation of map modernization.

FIMA Administrator Designate - Anthony Lowe has had a successful confirmation hearing before the Senate Banking Committee and the full Senate is likely to give a favorable vote soon. If so, Mr. Lowe will be the first Federal Insurance and Mitigation Administrator (FIMA) in FEMA. Lowe has considerable government, including local government, and Congressional experience. He is eager to play an active role in the continuing development of both the insurance and mitigation components of the National Flood Insurance Program.

Hazard Mitigation Grant Program (HMGP) - The 2003 budget proposal includes language terminating the formula-based, post-disaster HMGP and replacing it with a competitive pre-disaster mitigation grant program. The Association of State Floodplain Managers (ASFPM) has expressed concern about this proposal and has suggested that some balance between the two would be wise. Because FEMA's General Counsel believes that the budget proposal could be implemented without Congressional approval, it is important that the Congress assert itself if it has concerns about ending the provision for mitigation while recovering from a disaster.

Army Corps of Engineers

Both the House Transportation and Infrastructure Committee (Water Resources Subcommittee) and the Senate Environment and Public Works Committee are continuing to develop plans for the Water Resources Development Act (WRDA) 2002. Hearings have been held in the House. The Corps has been developing its suggestions. Markup could occur soon.

Community Rating System Update

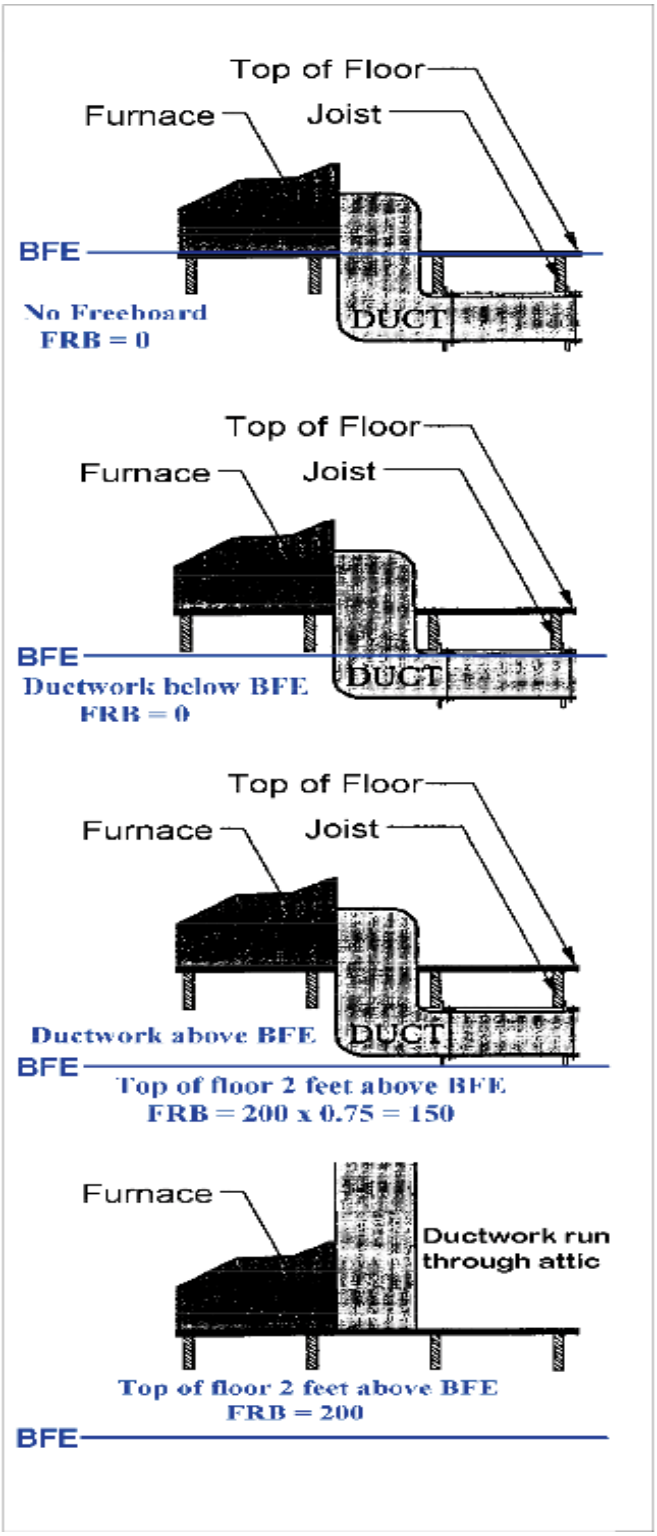
Local Regulations Advisory: Freeboard

by Rob Flaner, CFM
ISO / CRS Specialist

The Community Rating System (CRS) Coordinators Manual has once again been revised and was released in May, 2002. Included in this document is clarification on the proper enforcement of a popular regulatory standard on freeboard that many communities have in their floodplain management ordinances.

Freeboard is a margin of safety added to an elevation standard above the base flood elevation (BFE) to account for the impact of future development of the floodplain, debris jam flooding, or other flooding causes not reflected in FEMA's mapping standards. To participate in the National Flood Insurance Program (NFIP), a community must require new construction to be elevated to the BFE at a minimum. Many communities have decided to add this extra margin of safety to this standard and are receiving credit for this under the CRS. The CRS provides credit for up to 3 feet of freeboard.

Even though most communities have good intentions for this regulatory approach, a common problem occurs with the enforcement of this standard. The problem lies with the local regulatory official focusing only on the lowest floor when interpreting the scope of an elevation standard. FEMA's Regulations that govern the NFIP (44CFR Part 60), stipulates that communities must ensure that the lowest floor of any new residential building is elevated above the BFE. Also stipulated is that buildings be constructed with electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from accumulating within the components during conditions of flooding (60.3a(3)(iv). What this means in laymen's terms is, not only is the lowest floor to be elevated, but also all equipment and utilities that service the building (this includes duct work) must also be elevated, or floodproofed such that water can not accumulate in them during flooding conditions.



(continued on page 22)

Community Rating System Update *(continued from page 21)*

The problem that occurs with most communities that have adopted freeboard standards is that they focus only on the lowest floor when enforcing the standard and not on the utilities and machinery servicing the building. In other words, the lowest floor may be elevated to 2 feet above BFE, but the machinery is only elevated or floodproofed to the BFE. In this scenario, that extra margin of protection is only there for the lowest floor, and not these other insurance covered facilities.

Past CRS Coordinators Manuals have not addressed this issue when it comes to the enforcement of freeboard standards. However, based on direction from FEMA, and the fact that insurance claims are being paid for damage to air conditioners, furnaces, ductwork and insulation; the 2002 CRS Coordinators Manual will expand on the credit criteria for the freeboard element. In short, to receive 100% of the credit for the freeboard element, a community must include all machinery and equipment that service the building in their enforcement of the elevation standard. In other words, if a community has a 2 foot freeboard standard in their ordinance, they must require the lowest floor and all machinery and equipment that service the building to be elevated 2 feet above BFE. Yes, this includes ductwork! In most cases, an ordinance revision will not be necessary to meet this requirement, because most ordinances have the minimum required NFIP language in them. What will be required is a change in enforcement policy. When issuing a permit for new construction within the floodplain, local regulatory officials must be make clear and evident to the permitee what needs to be elevated. For communities participating in the CRS that are receiving credit for a freeboard standard, the CRS Specialist will verify implementation of this policy. Please note that this new credit criterion is not retroactive and will only be used to verify credit for permits issued after the release of the 2002 Coordinators Manual.

Any community needing clarification on this issue should contact their FEMA Regional Office, State NFIP Coordinator, or ISO / CRS Specialist. Also, FEMA has a Technical Bulletin (2-93) titled "Flood Resistant Materials Requirements" that offers guidance on allowable floodproofing techniques and materials for utilities and machinery that service a building. This bulletin is accessible on the FEMA web site *www.fema.gov/fima/techbul.shtm*

For questions or further information about this article, please contact Rob Flaner by email *rflaner@iso.com* or phone 208-939-4432.

Getting in Touch...

The ***Golden State Floodlight***, the State of California's Floodplain Management newsletter, is a publication of the Department of Water Resources; editing & layout, by Antoinette Ostoya Daniel; masthead & lead story graphic, by DWR Graphic Design. Material for publication is solicited from federal, state, regional and local entities whose work is relevant to floodplain management issues.

The purpose of this newsletter is to assist local communities in managing their floodplains and in meeting the Federal Emergency Management Agency requirements under the National Flood Insurance Program. This *free* publication is supported under a cooperative agreement with FEMA.

Readers are encouraged to submit reports or draft articles about their experiences with the administration and management of floodplains, the effects or prevention of floods, flooding and cleanup, public education or outreach efforts, or in related fields such as wetlands, storm water management, etc. Relevant photos, black & white or color, are especially welcome. Text or photos will *not* be returned unless specifically requested. Address material for publication to:

Ricardo S. Pineda, PE
California Department of Water Resources
1416 Ninth Street, Room 1623
Sacramento, CA 95814
FAX 916-653-3639

Copies of the ***Floodlight*** are available to schools, libraries and interested individuals, as well as local community officials, professional floodplain managers and staff, and professionals in various related fields as wetlands, the environment, water engineering, etc. To add new names and addresses, change or correct mailing labels, or for additional copies to the same location, please contact Bill Hom by e-mail, *billh@water.ca.gov* or at the office address listed.

Questions regarding 'by-lined' or attributed articles should be directed to the author or source listed with the article. Technical questions or discussions of issues should be addressed to the appropriate District floodplain management specialist:

Northern District: Millie Hocking
millie@water.ca.gov or 503-528-7418.

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ralee@water.ca.gov or 916-227-7605.

San Joaquin District: Ed Perez
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Golden State Floodlight

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